

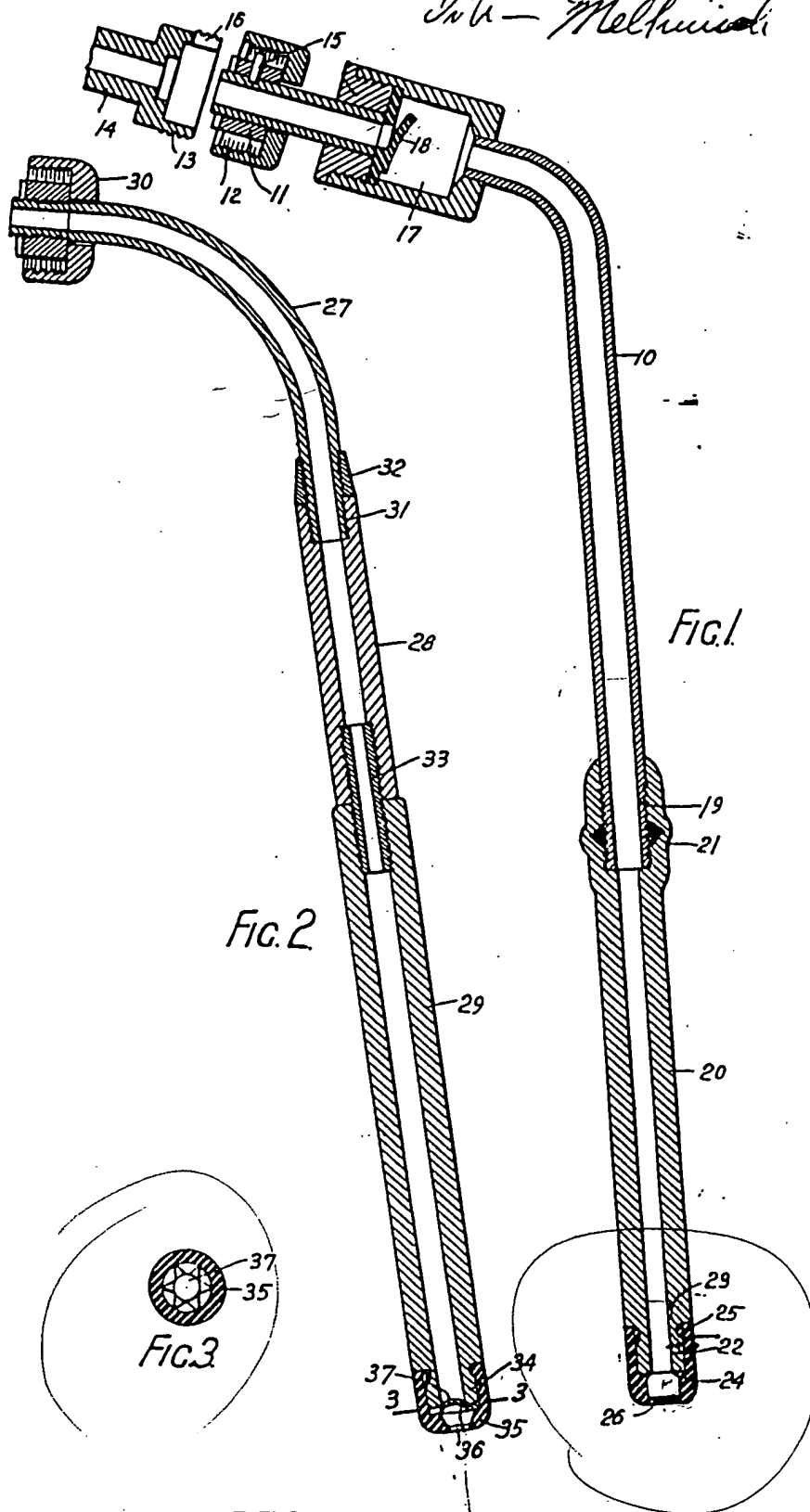
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## COMPLETE SPECIFICATION

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# PATENT SPECIFICATION



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## COMPLETE SPECIFICATION

### Oesophageal Tube for use with Animal Drench Guns

WE, DRUG HOUSES OF AUSTRALIA LIMITED, a Victorian Company, of 24, Bond Street, Melbourne, in the State of Victoria, Commonwealth of Australia, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

Experiment has shown that in dosing sheep or other animals with medicinal liquids such as phenothiazine, the use (with a drench gun) of a delivery tube which may be inserted into the oesophagus of the animal enables drenching to be carried out with great efficiency, and with the assurance that the animal actually swallows a correct dosage of liquid without 5  
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spilling or other loss thereof. Avoidance of waste is important quite apart from mere loss of liquid because it ensures against staining of wool caused by dripping from the gun, or ejection of the phenothiazine from the mouth of the sheep with consequent inadequate dosage. Staining seriously lowers the market value of wool. Drenching guns at present in use eject the phenothiazine suspension within the mouth, and unless immediately swallowed by the animal, dribbling frequently occurs with subsequent staining of the wool not only of the sheep immediately concerned but also of adjacent sheep confined in a pen or race.

The object of this invention is to provide an oesophageal tube which is both cheap and simple to manufacture, which will not harm an animal upon which it is used, which is efficient for large-scale use and which readily lends itself to manufacture by mass production methods.

An oesophageal tube according to this invention comprises a rigid portion having one end adapted for attachment to the discharge outlet of a drench gun, a more flexible portion having one end secured to the other end of the rigid portion, and a soft discharge tip on the other end of the flexible portion.

A non-return valve is preferably also incorporated in the oesophageal tube of the invention.

[Price 3s. 0d.]

Further features of the invention will be apparent from the accompanying drawings which illustrate two constructions of oesophageal tubes of the invention.

In the said drawings,

Figure 1 is a longitudinal sectional elevation along the axis of one of the said tubes;

Figure 2 is a similar view of the second tube, and.

Figure 3 is a detail view of a valve incorporated in the tube illustrated in Figure 2, the view being a sectional elevation upon the line 3—3 of Figure 2.

Referring first to Figure 1, the illustrated tube comprises a rigid portion 10 which is preferably made of metal and is bent almost through a right-angle partway along its length. At one end this portion is furnished with any suitable means for attachment to a drench gun discharge outlet; in the present example these means comprise a gasketed collar 11 and a union nut 12 to enter and screw upon a threaded spigot 13 of a drench gun nozzle 14 respectively. The collar 11 preferably has a locator pin 15 to engage in a slot 16 in the spigot 13 for ensuring correct orientation of the tube 10 relative to the drench gun.

The rigid portion 10 preferably includes a check or one-way valve to prevent return flow of liquid along the tube. In the embodiment illustrated in Figure 1 the portion 10 is partly constituted by a valve chamber 17 which houses a flexible clack valve member 18.

The other end of tube portion 10 is threaded as shown at 19 or otherwise provided with means for secure attachment thereto of a flexible tube portion 20. The end of the portion 10 preferably has a circumferential collar 21 of rounded or triangular cross-sectional shape fixed thereon by brazing or otherwise. This collar is able to bite into the tube portion 20 and thus ensure fluid-tight attachment of portion 10 to portion 20. The portion 20 is made of rubber or similar material of such stiffness as will enable the portion to bend when a side-wardly directed force is applied thereto, but will not allow the portion to

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crumple or collapse longitudinally when a moderate endwise load is applied thereto by pushing it down the gullet of an animal. This stiffness-flexibility character of the tube portion 20 is necessarily such as will enable it to bend in finding its way into the animal oesophagus while ensuring that the delivery end of the tube will remain directed into and downwardly of the oesophagus. A further factor in favour of making portion 20 as hard and unyielding as is compatible with the above stated requirements, is to ensure as far as possible against damage to the portion by the animal biting thereon.

At its other end the tube portion 20 is reduced in diameter as shown at 22 and formed with a circumferential groove 23. A soft rubber tip 24 is then snapped over the reduced diameter portion 22 and an internal ridge 25 at one of its ends enters the groove 23 as aforesaid.

The discharge tip or nozzle 24 has rounded edges to allow its easy passage into the oesophagus of the animal and has an end membrane 26 of thin soft rubber or the like which is slit or holed to allow the liquid dose discharged by the drench gun to be forced through this membrane and fed directly into the animal's oesophagus. The discharge tip 24 is made of material as soft as is compatible with retention of the tip upon the harder flexible tube portion 20.

The rubber tip 24 may easily be removed for cleansing it and the tube.

In the construction illustrated in Figures 2 and 3 the non-return valve is located near the outer instead of the inner end of the oesophageal tube. Thus the valve chamber 17 is eliminated and the valve is located close to the point at which any draw-back of fluid would occur. Thus the tube of Figures 2 and 3 is less bulky and even more efficient than that of Figure 1.

The oesophageal tube of Figures 2 and 3 is made in three main sections 27, 28 and 29.

Sections 27 and 28 are substantially rigid metal tubes and section 29 is more flexible, corresponding to the portion 20 previously described.

Section 27 is curved and is furnished with a captive threaded collar 30 at one end which is adapted to be threaded upon a drench gun nozzle. At its other end section 27 threads into section 28 as shown at 31 and the two sections are brazed together as shown at 32.

Sections 28 and 29 are detachably secured together by both threading upon a cylindrical connecting piece 33.

The outer end of section 29 is reduced in diameter as shown at 34 and a soft rubber cap 35 (similar to cap 24) is snapped thereover.

The cap 35 has a central fluid discharge orifice 36 (not a mere slit) and within it and pressed by it against the end of section 29 is a dished and star-shaped valve member 37. This normally seals the bore of the section 29 but can be forced away from the end of the section 29 by fluid pressure when the drench gun is operated, the fluid escaping through the peripheral slots in the valve member 37 and then through the orifice 36.

What we claim is:—

1. An oesophageal tube for use with an animal drench gun comprising a rigid portion having one end adapted for attachment to the discharge nozzle of a drench gun, a more flexible portion having one end secured to the other end of said rigid portion, and a soft discharge tip on the other end of said flexible portion.
2. A tube according to claim 1 wherein said tip is secured to said flexible portion by way of an internal flange on said tip which engages in a circumferential groove in said flexible portion.
3. A tube as claimed in claim 1 or claim 2 wherein said rigid portion incorporates a non-return valve.
4. A tube as claimed in claim 1 or claim 2 wherein a non-return valve is located at the outer end of the said flexible portion.
5. A tube as claimed in claim 1 or claim 2 comprising also a non-return valve in the form of a disc with peripheral passageways which is resiliently pressed against the outer end of the said flexible portion by the said soft discharge tip.
6. A tube as claimed in any one of the preceding claims in which the rigid section of the tube is formed from two tubes, one curved and one straight, permanently secured together.
7. A tube as claimed in any one of the preceding claims in which the more flexible section envelopes the end of the rigid section, the latter having a circumferential ridge.
8. A tube as claimed in any one of the preceding claims 1 to 6 inclusive in which the rigid and more flexible sections both thread upon a cylindrical connecting piece.
9. An oesophageal tube for use with an animal drench gun, substantially as illustrated in Figure 1 of the accompanying drawings and substantially as hereinbefore described by reference thereto.
10. An oesophageal tube for use with an

animal drench gun, substantially as illustrated  
in Figure 2 of the accompanying drawings and  
substantially as hereinbefore described by  
reference thereto.

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